

14, 15 and 17 have been cancelled without prejudice or disclaimer. New claims 20 to 31 have been added to define further aspects of the Applicants' invention. Claims 1 to 5, 7 to 13, 16 and 18 to 31 are now pending in the present application and are believed to distinguish patentably over the prior art.

In the Official Action, the Examiner has rejected claims 2, 3, 7 to 9 and 11 to 19 under 35 U.S.C. §112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which the Applicants regard as the invention. These claims have been amended to provide proper antecedents for the recited terms. With respect to the Examiner's comment concerning the terms "virtual devices" and "virtual gateways", the term "virtual" is well known to those of ordinary skill in the art and refers to devices that are not dedicated to a particular physical device. With respect to the Examiner's question as to why the wireless terminal includes a registry, as is clearly set out in the specification, the registry receives messages to be delivered to internal components as well as externally. The registry is used to hold these messages to enable the messages to be delivered appropriately.

With respect to prior art, the Examiner has rejected claims 1, 2 and 10 under 35 U.S.C. §102(e) as being anticipated by U.S. Patent No. 6,414,952 to Foley ("Foley"). The Examiner is alleging that the Applicants' invention as defined by these claims is clearly shown by Foley. Claims 4 to 6 and 9 have been rejected under 35 U.S.C. §103(a) as being unpatentable over Foley in view of U.S. Patent No. 5,978,672 to Hartmaier et al. ("Hartmaier"). The Examiner is alleging that the Applicants' invention as defined by these claims would be obvious to one of ordinary skill in the art in view of the combined teachings of these references. Claim 16 has been rejected under 35 U.S.C. §103(a) as being unpatentable over Hartmaier in view of U.S. Patent No. 6,075,796 to Katseff et al. ("Katseff"). The Examiner is alleging that the Applicants' invention as defined by these claims would be obvious to one of ordinary skill in the art in view of the combined teachings of these references. Applicants' thank the Examiner for indicating allowable subject matter in claims 8, 12, 14, 15 and 17 to 19.

Independent claim 1 has been amended to incorporate subject matter from allowable claim 14. Accordingly, Applicants respectfully submits that independent claim 1 now distinguishes patentably over the cited references and should be allowed. Since claims 2

to 5, 7 to 9 and 20 are dependent either directly or indirectly on independent claim 1, which is deemed allowable, Applicants respectfully submit that these claims should also be allowed.

Independent claim 10 has also been amended to incorporate subject matter from allowable claim 14 and therefore, is believed to distinguish patentably over the cited prior art. Since claims 11 to 13 and 21 to 24 are dependent either directly or indirectly on independent claim 10, which is deemed allowable, Applicants respectfully submit that these claims should also be allowed.

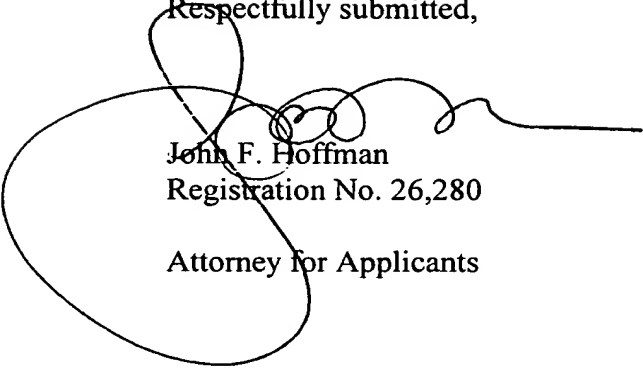
Independent claim 16 has been amended to incorporate subject matter from allowable claim 17, and is therefore, believed to distinguish patentably over the cited prior art. Since claims 18 and 19 are dependent either directly or indirectly on independent claim 16, which is deemed allowable, Applicants respectfully submit that these claims should also be allowed.

New independent claim 25 has been added and incorporates subject matter from original claims 10 and 12. Since the Examiner has indicated that claim 12 includes allowable subject matter, Applicants respectfully submit that this claim distinguishes patentably over the prior art and should be allowed. Since claims 26 to 29 are dependent either directly or indirectly on independent claim 25, which is deemed allowable, Applicants respectfully submit that these claims should also be allowed.

New independent claim 30 has been added and incorporates subject matter from original claims 11 and 14. Since the Examiner has indicated that claim 14 includes allowable subject matter, Applicants respectfully submit that this claim distinguishes patentably over the prior art and should be allowed. Since claim 31 is dependent directly on independent claim 30, which is deemed allowable, Applicants respectfully submit that this claim should also be allowed.

In view of the above, it is believed that the application is now in order for allowance and action to that end is respectfully requested.

Respectfully submitted,


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Name of Registered Representative

Signature

February 28, 2003

Date

APPENDIX SHOWING AMENDMENTS TO THE DISCLOSURE

Please amend the disclosure as follows:

Please delete the last paragraph on page 2 beginning at line 31 and ending on page 3 at line 2 and insert therefor, the following replacement paragraph:

According to another aspect of the present invention there is provided a communication server to act as a gateway for the transmission of messages between two [virtual] devices communicating with networks implementing different protocols, said communication server comprising:

Please delete the third paragraph on page 3 and insert therefor, the following replacement paragraph:

a virtual gateway accessing said protocol conversion information upon receipt of a message to be transmitted between said [virtual] devices and converting the protocol of said message to a protocol compatible with the network to which said message is being sent.

Please delete the fourth paragraph on page 3 and insert therefor, the following replacement paragraph:

In still yet another aspect of the present invention there is provided a [A] communication system comprising:

Please delete the thirteenth paragraph on page 4 and insert therefor, the following replacement paragraph:

Figure 15 shows an OSI model protocol stack and its conversions in [the] a communications path across the communication system of Figure 4.

Please delete the first full paragraph on page 6 and insert therefor, the following replacement paragraph:

The wireless terminals 16 follow a logical model consistent with the communication server 12. The host computers 18 on the other hand do not follow the logical

model followed by the wireless terminals 16 and communication server 12. Thus, communications through the communication server 12, between a wireless terminal 16 and a host computer 18, are based on communications between a "known application" and an "unknown host". "Unknown" in the context of the present application refers to the fact that the communication server 12 only knows the basic API levels of the host computers 18. Since the host computers 18 are typically managed by third party institutions, there is little that can be done to change their API levels to allow them to communicate directly with the wireless terminals 16. Therefore, this poses a potential communications problem especially when a message is transmitted from a host computer 18 that is to be delivered to a wireless terminal 16.

Please delete the first full paragraph on page 8 and insert therefor, the following replacement paragraph:

Wireless terminals 164 communicate with the host computers 140 to 144 and 150 through the communication server 112 over the WPDN 120 and land-line network 122. Likewise the host computers communicate with the wireless terminals 164 over the same communication [network] networks. Wireless terminals 164 also communicate with other wireless terminals 164 via the communication server 112 over the WPDN 120. The host computers also communicate with each other via the communication server 112 over the land-line based network 122.

Please delete the last paragraph on page 9 beginning at line 30 and ending on page 10 at line 5 and insert therefor, the following replacement paragraph:

If connectivity information for the API message exists in the external registry 212, the API message and its connectivity information are passed to the autorouter 214 for processing. In response, the autorouter 214 returns a status message to the message sending component 204 via the message dispatcher 200 and creates a logical message LMSG, which is passed to the appropriate device driver 218 based on the connectivity information via a virtual port 216. The device driver 218 sends the logical message LMSG to the physical output port allowing the logical message to be sent over the WPDN 120.

Please delete the second paragraph on page 10 and insert therefor, the following replacement paragraph:

When an incoming logical message is received on an output port of the wireless terminal 164, the associated device driver 218 passes the incoming logical message LMSG to the check registry 220. The check registry 220 performs filtering and checking of the logical message based on information in the external registry 212 associated with the message sending party. If the logical message is not recognized, it is discarded by the check registry 220. During the checking and filtering of a recognized logical message LMSG, the check registry determines whether the logical message is to be processed by the autobridge 214 or conveyed as an API message to the message dispatcher 200. If the logical message is to be processed by the autobridge 214, the check registry 220 conveys the logical message to the autobridge, which in turn routes the logical message to the proper device driver 218. Otherwise, the check registry 220 passes the API message to the message dispatcher 200.

Please delete the first full paragraph on page 11 and insert therefor, the following replacement paragraph:

Turning now to Figure 10, the virtual gateway 284 is better illustrated. Virtual gateway 284 includes a preprocessor 300 receiving input from a virtual device VD (either the virtual host 280 or the virtual terminal 282) that receives logical messages from a sending physical device 14. The preprocessor 300 communicates with the knowledge base 286 and with a processor 302. Processor 302 also communicates with the knowledge base 286 as well as with a postprocessor 304. The postprocessor 304 communicates with the knowledge base 286 and provides output to a virtual device VD (either the virtual host 280 or the virtual terminal 282). The virtual device VD in turn sends a logical message to a receiving physical device 14 [(either the virtual host 280 or the virtual terminal 282)]. An expert system tool kit 306 allows the knowledge base 286 to grow to meet the needs of the communication system 110.

Please delete the third paragraph on page 17 beginning at line 19 and ending on page 18 at line 8 and insert therefor, the following replacement paragraph:

For [example, for] a host computer to host computer connection through the communication server 112, the source host computer transmits an API message to the communication server 112 without any wrapping. After the API message passes through the virtual terminal 282, the API message as well as the virtual device ID of the virtual terminal 282 is sent to the preprocessor 300. As mentioned previously, the preprocessor attempts to extract the virtual device message header VDMSG_HDR and the logic message header LMSG_HDR from the API message. In this case, the preprocessor 300 recognizes that the API message does not include a virtual message header or a logical message header. The preprocessor 300 in turn analyzes the API message and interacts with the knowledge base 286 to determine the target logical connection ID for the API message. After the target logical connection ID is located, it is sent with the API message to the processor 302. The processor 302 passes the API message to the business processors therein, which in turn process the message to ensure the API message protocol is compatible with that used by the destination host computer. The processed API message is then passed to the postprocessor 304 with the target logical connection ID. The postprocessor uses the target logical connection ID as a key to search the knowledge base 286 for wrapping information. In this case, since the destination is a host computer, no wrapping is required. The postprocessor 304 in turn uses the target logical connection ID to find the destination virtual device, in this case the virtual terminal 282, and passes the API message to it. The virtual terminal 282 in turn passes the API message to the destination host computer over the land-line network 122.

APPENDIX SHOWING AMENDMENTS TO THE CLAIMS

Please cancel claims 6, 14, 15 and 17 without prejudice or disclaimer.

Please amend claims 1 to 3, 5, 7 to 11, 16 and 18 as follows:

1. (Amended) A communication system comprising:

at least two communication networks over which communications between physical devices connected to said communication networks are to be carried, said communication networks implementing different protocols for messaging; and

a communication server acting between said communication networks and through which messages transmitted between said communication networks pass, said communication server including a knowledge base storing protocol conversion information, said communication server accessing said [protocol conversion information in said] knowledge base upon receipt of a message [and] and searching said knowledge base for appropriate protocol conversion information using a header accompanying said message or the message itself as a key to said searching, said communicating server converting the protocol thereof to a protocol compatible with the communication network to which said message is being sent.

2. (Amended) A communication system as defined in claim 1 wherein said communication server includes virtual devices communicating with said communication networks and a virtual gateway bridging said virtual [networks] devices, said virtual gateway accessing said knowledge base and converting protocols of said messages.

3. (Amended) A communication system as defined in claim 2 wherein said virtual gateway includes a preprocessor, a processor and a postprocessor, said preprocessor examining each incoming message and/or accompanying header if it exists to locate target logical connection information determining the target destination for said incoming message, said processor converting the protocol of each incoming message, [where appropriate,] if required for transmission to the communication network to which said message is being sent based on said target logical connection information, said postprocessor wrapping each message received

from said processor with headers, [where appropriate] if required for transmission to the communication network to which said message is being sent.

5. (Amended) A communication system as defined in claim 4 wherein messages transmitted over said wireless network, include API messages to be processed by destination physical devices and logical message headers including target logical connection information specifying the destinations for said API messages that wrap said API messages.

7. (Amended) A communication system as defined in claim [6] 5 wherein said preprocessor strips the logical message header from said API message upon receipt of a message from said wireless network and uses the target logical connection information in said logical message header as a key to search said knowledge base for said protocol conversion information.

8. (Amended) A communication system as defined in claim 7 wherein said preprocessor analyzes the API message of a message received from said wireless network for said target logical connection information if said target logical connection information cannot be determined from said logical message header and uses the target connection information in said API message as said key.

9. (Amended) A communication system as defined in claim 4 wherein messages transmitted over said land-line network are in the form of API messages, said preprocessor analyzing the API message of a message received from said land-line network for said target logical connection information and using the target connection information in said API message as a key to search said knowledge base for said protocol conversion information.

10. (Amended) A communication server [to act] acting as a gateway for the transmission of messages between two virtual devices communicating with networks implementing different protocols, said communication server comprising:

a knowledge base storing protocol conversion information to convert messages of one protocol to a different protocol; and

a virtual gateway accessing said protocol conversion information upon receipt of a message to be transmitted between said virtual devices and converting the protocol of said message to a protocol compatible with the network to which said message is being sent, said communication server accessing said knowledge base upon receipt of a message and searching said knowledge base for appropriate protocol conversion information using a header accompanying said message or the message itself as a key to said searching.

11. (Amended) A communication server as defined in claim 10 wherein said virtual gateway includes a preprocessor, a processor and a postprocessor, said preprocessor examining each incoming message and/or accompanying header if it exists to locate target logical connection information determining the target destination for said incoming message, said processor converting the protocol of each incoming message, where appropriate, based on said target logical connection information, said postprocessor wrapping each message received from said processor with headers, where appropriate.

16. (Amended) A communication system comprising:

- a wireless network;
- at least one wireless terminal to transmit messages over said wireless network;
- a land-line network;
- at least one host computer connected to said land-line network to transmit messages over said land-line network; and

a communication server providing communications connectivity for messages to be transmitted from one network to the other, wherein said at least one wireless terminal and said communication server include registries, said registries including mapping information to map physically said at least one wireless terminal to said land-line network to enable messages transmitted by said at least one wireless terminal to be delivered to said at least one host computer, wherein the registry in said at least one wireless terminal maps drivers and ports of said wireless terminal to ports of said communication server.

18. (Amended) A communication system as defined in claim [17] 16 wherein the registry in said communication server maps logical connections between said wireless and land-line networks.